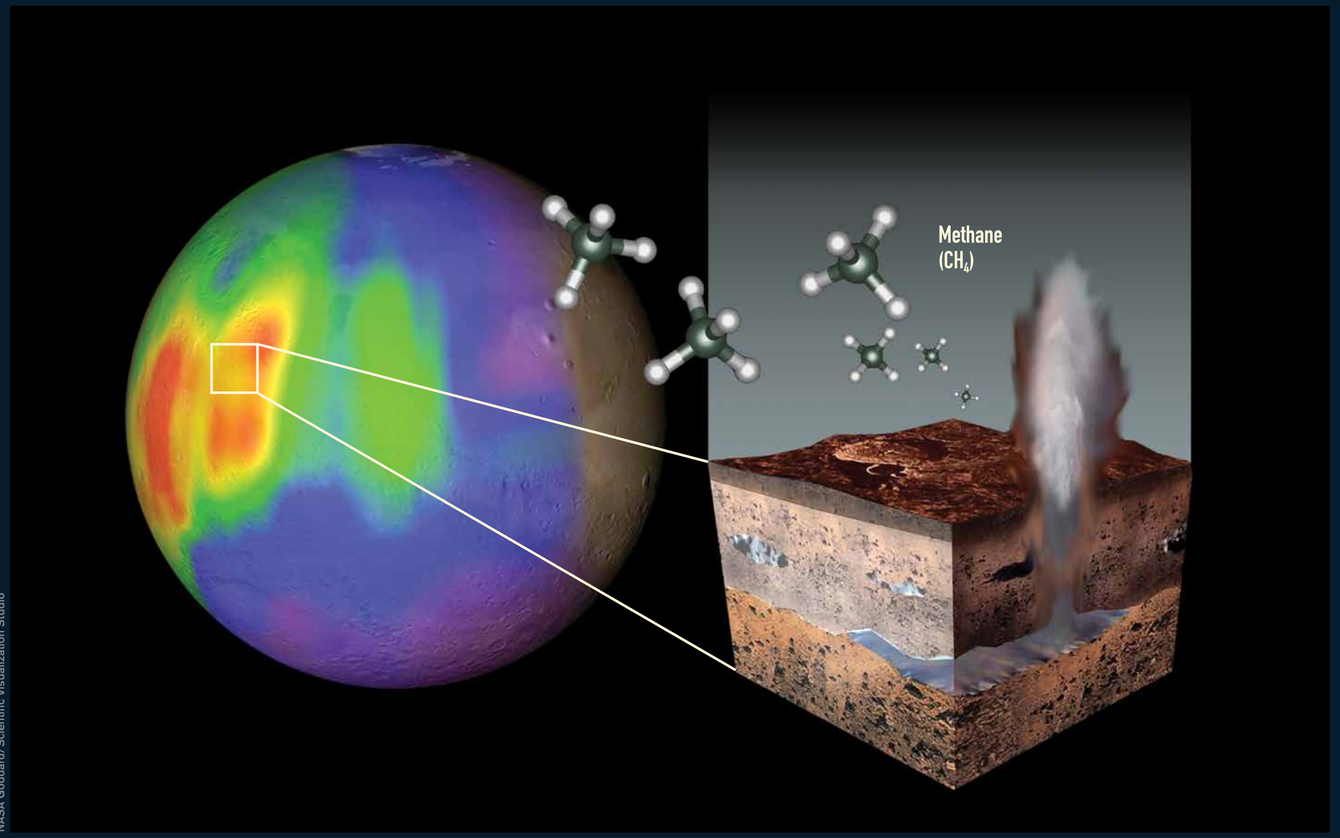
STATION 09 Goddard Initiatives

Search for Life on Mars

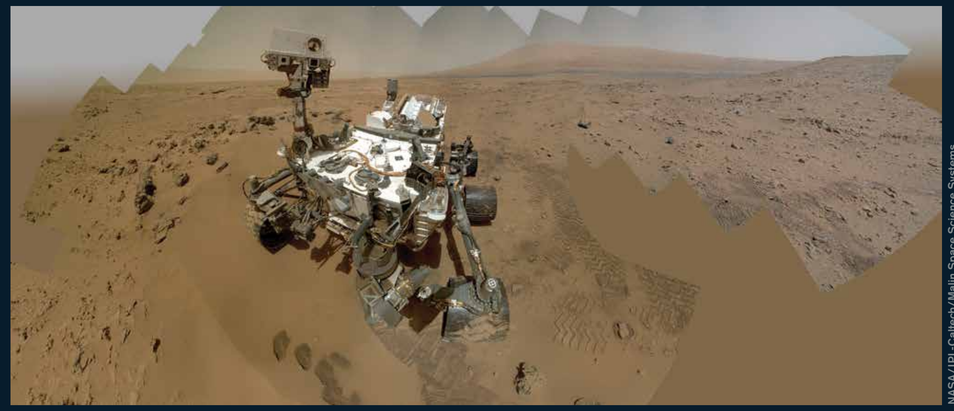
The search for life (existing or extinct) has been a driving theme in exploration, giving rise to several NASA missions and to sensitive searches for gases related to biology. Mars is one of a select few Solar System bodies where life might have evolved and perhaps might survive in favorable niches even today.



NASA Goddard/Scientific Visualization Studio

METHANE RELEASES ON MARS: In 2003, Goddard scientists detected methane on Mars. On Earth, methane is an indicator of biology and geology, and these observations may point to habitable regions on Mars, or active geological areas. On Mars, methane was found in large plumes (red, above).

Was Ancient Mars Habitable?



NASA/JPL-Caltech/Malin Space Science Systems

CURIOSITY SELF-PORTRAIT: Goddard scientists search for methane and other organics on Mars with the Curiosity rover, the most powerful lander ever to operate on the surface of Mars.

Mars' signature color (red) originates in a cover of rust, a deep layer of dusty iron-oxide covering much of its surface.

Mars is also blanketed with many other minerals including some that formed in water, indicative of a wet past.

DID YOU KNOW?

Life controls Earth's atmosphere. Oxygen and carbon dioxide are produced by life, but so are many less abundant gases. Methane, ammonia and nitrous oxide are produced mainly by biological processes. Without life, our atmosphere would have a very different composition. That is why scientists seek "biomarker" gases on Mars and exoplanets.